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EMERGENCY ENTOMOLOGICAL SERVICE
UNITED STATES DEPARTMENT OF AGRICULTURE,
Reporting cooperation between Federal, State and Station
Entomologists and other Agencies.

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FOREWORD.

In order to conserve labor and supplies no notices will be sent out regarding this circular. It will be issued ~~as~~ near the first of each month as practicable. All matter should be transmitted to Dr. L. O. Howard in time to reach the editor by the 25th of the month. All entomologists receiving this circular are urged to contribute matter relating to the occurrence and abundance of insects.

Since the last number was issued, a class in the Entomology of Disease, Hygiene and Sanitation, composed of about forty members of the Bureau of Entomology has been formed. The course of study will consist of thirty or more lectures, given once a week on Monday afternoons at 3:30. The lectures will be about one-half hour in length and will be followed by reviews of important publications, reports of sanitary inspectors and experiments. The course is principally aimed at training a large group of men for army and municipal sanitary entomology. The proceedings are mimeographed and

will be sent to any one desiring to enroll in the class. Teachers not now presenting courses in this subject may possibly desire to give the course to groups of advanced students. All correspondence should be addressed to the class secretary, Jacob Kotinsky, Bureau of Entomology, Washington, D.C.

W.D.Pierce.

REPORTS OF SECTIONS OF THE BUREAU OF ENTOMOLOGY.

DECIDUOUS FRUIT INSECT INVESTIGATIONS:

Reports from Bureau agents indicate that orchard insect conditions over the country continue favorable and that no species of insect is unusually abundant and destructive, with perhaps one or two exceptions.

In regard to pecan insects, Mr. John B. Gill of Monticello, Florida, states that none of the more important pests has appeared in unusual abundance. It is interesting to note that the pecan nut case bearer (Acrobasis hebescella) is much less injurious in that particular section than it has been for the past three years. The nests of the fall webworm are already quite prevalent in orchards, and it is believed the second brood of larvae will be so abundant as to cause serious damage during the summer months.

According to O.I. Snapp, engaged in extension work in Mississippi, the fall webworm is excessively abundant in the coastal region of that State. Mr. Snapp has under way large-scale dusting and spraying demonstrations for the benefit of interested pecan growers.

As stated by A.I. Fabis, Brownwood, Texas, there will be a considerable reduction of pecans in that State from the nut-infesting Acrobasis. The same intimation comes from Mr. J.D. Mitchell of Victoria, Texas, who believes that seventy-five per cent of the nuts will be destroyed by this insect.

Mr. R.J. Fiske reports insect conditions normal in the Pecos Valley, New Mexico, though there is some evidence that there may be a grasshopper outbreak later in the summer.

Messrs. Dwight Isely and A.J. Ackerman report from the Ozark region of ~~Arkansas~~ that the bulk of the first brood codling moth in cages already emerged, though there is but little evidence of their work in orchards as yet. Plum curculio injury is much in evidence in a few localities. The rose leaf-hopper is very abundant in a large percentage of the orchards, and there is a green fruit worm (species not indicated) which has caused some injury to fruit. The grapevine flea beetle is present in the majority of vineyards, although no serious injury has thus far been noted.

Mr. J.M. Robinson, engaged in extension work in North Carolina and Tennessee, advises that on the whole there has been less than normal disturbance from orchard insect pests in North Carolina. While the usual

insects are present, such as the San Jose scale, codling moth, peach and apple borers, etc., none of these is noteworthy from their injuries. Much the same conditions obtain in Tennessee, with the possible exception of tent caterpillars being rather more abundant than usual and conspicuous when seeking pupation quarters. Mr. Robinson reports an increasing interest in spraying in orchard insect control in these two states.

In the environs of Washington last year (1917) the tent caterpillar was more abundant than for many years past. According to Mr. R.A. Cushman, the insect during the present season is much decreased in abundance and very few wild cherry trees were observed as completely defoliated, and many are entirely without infestation. The winter apparently had no appreciable effect in controlling the insect, as the eggs hatched normally; also disease and parasites can apparently not account for the decrease in abundance. The percentage of mortality from these causes in the nests at this time is very low, as was also parasitism by egg parasites.

In the neighborhood of French Creek, W.Va., as reported by Mr. F.E. Brooks, oviposition by the codling moth was under way about May 24, and indications are that the insect is rather less abundant than normally. The plum curculio is present as usual, and owing to the light fruit crop injury by this insect to the fruit is much in evidence. Spraying for codling moth and curculio has been done to a greater extent than usual in spite of advanced cost of materials and labor. The plum gouger (Anthrenus scutellaris) is also present, causing 50 per cent as much injury as the plum curculio. Aphids of various species are reported in considerable abundance, with but little spraying being done by way of control. The rosy apple aphid in particular has done injury to apples.

Mr. Wm.O. Ellis, with headquarters at Riverton, N.J., reports that the rosy apple aphid and other aphids of the orchard, especially Aphis pomi, received such a severe set back from the April snow and sleet storm that injuries are inconsequential. The plum curculio continues a pest as it has been for two or three years. The pear Psylla, Psylla pyricola, while very abundant last year in the vicinity of Riverton, is much less in evidence the present season. As a result of examination of several widely separate pear orchards, it was ascertained that the eggs and adults were very uncommon.

In Rhode Island, as reported by Mr. F.J. Rimoldi, the light apple red bug is quite prevalent. The bud moth is also troublesome to apples, and the curculio is present, attacking newly set apples.

No unusual conditions are reported by Mr. E.H. Siegler from Connecticut, though the usual orchard pests are noted at present, with the exception of apple aphids, which are relatively scarce.

In Southern Indiana, as stated by Mr. R.W. Kelley, the plum curculio is unusually abundant in orchards, which he attributes to the fact that weather conditions prohibited applying the first foliage spray. The bud moth appears to be rather more common than usual, since specimens have been received from different sections of the state.

In the grape belt of northern Ohio, Mr. G.A. Runner reports that insect conditions are about normal. The first emergence of the grape berry moth from overwintering material occurred on May 22. The condition of this material indicates a somewhat lighter emergence than usual of this insect. Apple aphids were abundant earlier in the season in a number of orchards

in Erie and Ottawa Counties. They were effectively controlled by the delayed dormant spraying.

In the northern Ohio district, there was serious injury from cold to peaches, grapes and other fruit crops. In the case of peaches, the older trees show dead twigs and frozen spots on the trunks and main branches. Catawba grapes suffered especially from cold on the upper islands (put-in-Bay) Middle Bass and Isle St. George) and at Sandusky and Venice on the mainland. Many of the vines near Sandusky were killed to the ground and new wood will have to be grown from the roots, which are apparently in good condition.

In Michigan the fruit crop has also been seriously injured by cold, including the trees of certain fruits. Insect conditions continue favorable however. Many codling moth larvae were apparently destroyed in their hibernation quarters and aphids are very scarce throughout the entire western part of Michigan. A climbing cutworm which has been in evidence in the southwestern part of the state is also less abundant than usual.

Mr. R.L. Nougaret, of Fresno, California, recently investigated the pear thrips situation in that state. In the Santa Clara Valley, where the prune is by far the fruit mostly grown, there is a serious outbreak of the thrips, especially in orchards a short distance south of San Jose and between this town and Los Gatos. Where spraying for the control of adults was done, this was quite successful. This is practiced by the large growers, but the smaller orchardists do not spray for adults, but depend for the control of the pest upon the destruction of the larvae. The prune crop for the valley was thought to be about 75 per cent of the normal one, the shortage being mostly due to thrips injury, although the buds were less vigorous than normal, owing to the protracted drouth of the preceding summer and autumn.

At Suisun and Vacaville district of the Sacramento River, the pear thrips was also unusually abundant and the serious injury to the pear crop can be mainly ascribed to the attack of this insect. The pear crop of the Sacramento River, while smaller than normal, is fair. The distillate, nicotine spray continues to be an effective treatment for the pear thrips and is largely employed by orchardists in the control of the pest.

In the Rogue River Valley, Oregon, Mr. M.A. Yothers reports unusual abundance of the rosy apple aphid, which has already occasioned considerable injury to young apples and has caused a considerable amount of curling of foliage. Several species of Coccinellids and Syrphids are however at work on the aphids and may succeed in materially reducing the insect.

From Portland, Oregon, Mr. E.J. Newcomer reports that weather conditions have been ideal during the blossoming period of fruits, with the result that pears and prunes, particularly prunes have set a very heavy crop. There is also a good setting of apples. Mr. Newcomer reports a species of thrips fairly common about Salem, working on cherries, which he has provisionally determined as the pear thrips. During a recent trip to the Willamette Valley, the *Syneta* leaf beetle was observed to be present in about normal numbers, the injury to fruit running about 30 per cent in most places. According to Mr. Fisher, of the Bureau of Plant Industry, the green peach aphid, *Myzus persicae*, is abundant at Wenatchee, Wash.

Mr. A.B. Black, engaged in extension work in Oregon, also states that there are two species of aphids more serious to prunes than heretofore

known in that state.

Mr. H.K.Plank, cooperating with the Washington Agricultural Experiment Station in cranberry insect investigations, writes from Seaview, Wash. that there is a large infestation of the blackhead fireworm in bogs in that locality and that the insect is very generally distributed, particularly on the older bogs. Good results in control are being secured by applications of 40 per cent nicotine sulphate, 1-800, and fish-oil soap, shortly after the eggs begin to hatch. The cranberry tip worm, thought to be Dasyneura vaccinii, has been noted working on new cranberry growth in one bog south of Astoria, Oregon. Very little injury by this pest has heretofore been noted and no serious outbreak is expected.

A.L.Quaintance,
May 31, 1918.

CEREAL AND FORAGE INSECT INVESTIGATIONS:

Mr. A.L.Strand reports from Bozeman, Montana, under date of April 26, that grasshoppers (Melanoplus sp.) were hatching out in considerable numbers in various localities in Western Montana. From all indications they will be especially abundant this season on the Flathead Indian Reservation in the Oliver gulch section and in the Camas country. However, the territory infested does not appear to be quite so extensive as last year, due to the fact that a large amount of then vacant land has since been plowed up. The cooley cricket (Penanabrus scabricollis Thos.) has again appeared in very large numbers in a restricted area near Ronan. Most of these crickets were then in the third instar.

Mr. H.L.Seamans, Bozeman, Montana, under date of May 19, reported a very slight infestation of grasshoppers (Melanoplus sp.) in Broadwater County, and in other nearby localities in which he has made observations.

Mr. H.B.Parks, under date of April 15, from College Station, Texas, informed us that he had just completed a field survey for chinch bugs, (Blissus leucopterus Say) in Tarrant and Dallas Counties, Texas. Very heavy rains had occurred previous to the inspection, and the ground was so wet that it was almost impossible to go any distance into the fields. He did not find chinch bugs in dangerous numbers in these localities.

Mr. A.H.Hollinger, College Station, Texas, has recently completed a preliminary field survey relative to chinch bugs and other allied insect problems in the two northern tiers of counties in Texas comprising the counties of Hopkins, Franklin, Titus, Bowie, Red River, Lamar, Delta, Fannin, Grayson, Collin, Denton, Cook, Montague, Wise, Cole, Wichita, and Parker. He has found the chinch bug situation to be such that under normal seasonal conditions there will probably not be any very serious outbreaks this season. However, he found chinch bugs in some numbers in almost every county visited and in a few counties they were very abundant. Near Clarksville, in Lamar county, the chinch bug infestation is of importance in parts of the adjacent prairie country. In one wheat field examined the chinch bugs average over ten to each stool, indicating potential damage to this crop, and to the corn later on, should the season be at all dry. At Bowie, Montague county, eggs and young chinch bugs were observed in considerable numbers, and there are possibilities of severe damage in this region. Mr. Hollinger also reports a very severe cutworm outbreak in the vicinity of Gonzales, Gonzales county, Texas. This outbreak was quite severe and appeared to be

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rather general over a considerable area. Several fields of cotton, corn, cane, and other crops were found to be very greatly damaged. In a few places several acres of land were entirely devastated of everything save Johnson grass, which was attacked to only a slight degree. These larvae feed on practically all kinds of weeds and plants except the Johnson grass. Even this however showed the effect of their attack in a few instances. The injury was most noticeable in low or depressed places, and in the more weedy portions of the fields, but after devastation of such places the larvae migrate freely until they were abundant over the entire area. This outbreak was successfully controlled by poison bran mash.

Lachnosterna adults were also present in considerable numbers in Gonzales county, and were observed to be doing considerable damage, especially to cotton plants.

Injury by the rough-headed corn stalk borer (*Ligyrus rugiceps* Lec.) has been reported in several counties in southeastern Texas, and is locally causing considerable damage as far north as Shelby county. It is being investigated.

W.R. Walton,
May 29, 1918.

TRUCK CROP INSECT INVESTIGATIONS.

The melon aphid continues to be the subject of complaint in several regions, especially in California, Alabama and Texas. The same is true of the bean aphid (*Aphis rumicis* L.) in Ohio, New Jersey and California.

Cutworms have been reported troublesome in Kansas, Tennessee, New Jersey, Indiana, Wisconsin, Pennsylvania, Oklahoma, Georgia, and Arizona.

The striped cucumber beetle (*Diabrotica vittata*) has made its appearance in northern Indiana and in Virginia. The usual number of complaints of injury from this species are being made.

The potato flea-beetle (*Epitrix cucumeris* Harr.) has been very destructive during the month in Maryland, Virginia, and the District of Columbia, and in many other localities, both to potato and tomato.

The Colorado potato beetle was reported by Mr. F.M. Wadley, ovipositing at Ft. Scott, Kansas, May 6. On the same date Mr. J.A. Bradley reported this species injurious at Jonesboro, Ark. The species has also been reported injurious in Grimes County, Texas, on numerous farms. It was also injurious in Georgia.

The spinach aphid (*Myzus persicae* Sulz.) has been the dominant species of aphid in the District of Columbia throughout the spring and at the beginning of the last week in May had developed in great numbers on wild mustard, causing the premature death of the tops of these weeds. With the death of these plants the insect will spread to nearby cabbage and cruciferous as well as other truck crops. It is quite possible that it will be nearly as injurious to potato as last year. The harlequin cabbage bug has been reported injurious in several of the Gulf States.

The larger stalk borer (*Papaipema nitela* Guen.) has been particularly troublesome in Mississippi on tomato and has also been reported from other localities.

Root maggots, chiefly the seed-corn maggot (Pegomya fusciceps) has been troublesome in many regions to cabbage, radish, turnip, beet, and other truck crops.

Injury by the bean leaf-beetle (Cerotoma trifurcata Fab.) has been reported in Georgia, also in the vicinity of the District of Columbia.

The common asparagus beetle (Crioceris asparagi L.) has been unusually abundant and destructive to asparagus tips in Virginia, Maryland, and in the District of Columbia.

The sweet potato flea-beetle (Chaetocnema confinis) has been reported destructive to sweet potato in the Gulf region, especially in Alabama.

Peppers have been reported injured over a large area during the first week in May in the vicinity of Gardengrove, California, by Mr. H. J. Ryan, the offenders being three species of Tenebrionidae, Blapstinus fortis, Bl. brevicollis and Ulus crassus.

The common cabbage worm (Pontia rapae) has developed in the vicinity of the District of Columbia during the last week in May on both wild mustard and cabbage. The cabbage looper (Autographa brassicae Riley) was about three-quarter grown during the last week of May.

The rose leaf-beetle has been reported injurious to beans, strawberry, clover, and roses in Baltimore County, Maryland.

The sweet potato weevil has made its appearance in several localities which have not been previously infested. These are in Alabama on new farms in the Grand Bay District.

The most interesting pest which has been brought to the writer's notice is a species of weevil which will eventually be found in all probability to feed on sweet potato in this country, as it already has been observed by Prof. Archibald H. Ritchie, Govt. Entomologist of Jamaica, attacking sweet potato on that Island. It is very closely related to the so-called sweet potato "scarabee" (Euscepes batatae) and is known as E. porcellus Boh. It was first discovered by Mr. K. E. Bragdon, special field agent, Bureau of Entomology, at Moore Haven, Florida, in the extreme southern portion of the State, on Lake Okeechobee. It occurs on Calonyction aculeatum and Ipomoea pes-caprae. This species is smaller than the "scarabee" and differs in structural characters and in coloration. It will bear close watching.

J. W. Bailey, collaborator, made some notes while traveling through Arizona to investigate reports of the occurrence of the sweet potato weevil in the Salt River Valley of that State. He did not find any proof of its occurrence there. His notes show that Irish potatoes were being injured by plant lice, but that ladybird beetles were destroying them. In the Japanese gardens he observed that clean cultural practice was being carried out and that insecticides were ready for use if needed. A lace bug of the family Tingitidae was observed on sweet potato, believed to be the same species which came under observation the previous year. The potatoes were also being infested with the tobacco stalk weevil (Trichobaris mucorea Lec.). Young onions were infested by the onion thrips.

Concerning the Flight of the Sweet Potato Weevil. Considerable differences of opinion have existed as to the powers of flight of Cylas formicarius Fab., some of the earlier writers have claimed that the species was not able to fly and others that it was wingless. It has wings but they do not appear at first glance to be particularly strong. Mr. M. M. High

has seen the weevil in short flight; others have had the same experience.

Mr. Graf writes from McClung, Fla. "I have noted several sweet potato weevil adults in flight around the lamp at the laboratory here during the last few nights. Mr. B. L. Boyden and Mr. W. H. Merrill, and myself, noted five flying at different times last night. There are some infested potatoes in one of the rear rooms and apparently the beetles are attracted by the light. They do not appear until the lamp has been burning some time. The lamp used throws a strong white light, being a gasoline mantle lamp of rather high candle power. The beetles fly rapidly and as they generally hit the wall their flight is of short duration. From what we have seen thus far these beetles may turn out to be strong fliers and it will be surprising if it is not proven before the summer is over that the beetles can travel long distances. Their streamline construction and strong wings certainly are made to order for both speed and distance."

What Mr. Graf says in regard to the structure of this species is quite obvious. The insect is elongated, its surface is remarkably smooth and it would seem that provided with wings which may be considerably stronger than we suppose it might turn out to be a much stronger flier than we have heretofore believed.

We all realize that little is definitely known about the flight of this species but the consensus of opinion is that it does not fly long distances. It could, however, be carried a somewhat longer distance by flying with the wind, as in the case of the Colorado potato beetle. It is not so small that its flight could not be followed by the unaided eye, but an opera or field glass might facilitate matters.

Everyone in the field who is familiar with the sweet potato weevil should watch carefully and make notes of its flight

Sweet potato weevil work in Louisiana. Besides the state Bureau leader, seven men are now engaged on this project. One man especially trained in Botany has been assigned to determine the wild food plants of the weevil in Louisiana, and the areas in which they occur. Each of the other men has been detailed to make a general survey of several adjoining parishes, to obtain first hand information regarding sweet potato storage houses and growers of sweet potato slips for sale. Accurate information in these premises, as well as data regarding the movement of tubers and slips from one point to another has not hitherto been available although badly needed.

The inspectors are also collecting general information regarding the sweet potato weevil verifying its presence in doubtful sections. At this time a satisfactory farm to farm inspection cannot well be made since few farmers have tubers on hand and plants in the field are small. A more intensive survey, utilizing the information now being obtained, will be conducted at harvest time.

Reports indicate that growers who have had previous experience with the weevil have used certain control measures, especially rotation of crops, with considerable success. In the southwestern portion of the state, where the sweet potato industry is especially important, growers have shown much interest and cooperative spirit in the work.

F. H. Chittenden,
May 31, 1918.

Control of the Colorado potato beetle in Louisiana. It has long been the belief in parts of Louisiana that the Irish potato could not be grown because of the presence of the Colorado potato beetle (Leptinotarsa decemlineata Say). An unusually large acreage was planted in the state this year, though unfortunately the growers are having trouble in satisfactorily disposing of the crop.

The Bureau of Crop Estimates recently placed the acreage of the 1918 spring crop of Irish potatoes in Louisiana at 39,015 acres. These figures cover only the commercial crop, not including home gardens. Last year the state devoted 22,715 acres to the crop.

In Jefferson Parish it is estimated that 1000 acres were planted to Irish potatoes, in which the growers have been of the opinion that the beetle could not be satisfactorily controlled. Mr. L.W. Wilkinson, County Agent of the parish, has been largely instrumental in changing this idea by demonstration work with arsenicals.

According to crop estimates, La Fourche Parish with 13,050 acres leads in acreage planted this year. Mr. E.P. Barrios, special field agent, Bureau of Entomology, during a portion of the past year and now emergency demonstration agent of La Fourche Parish, in a recent letter to the writer, advised that:

"The Colorado potato beetle was exceedingly numerous in the lower portion of the Parish, but was somewhat localized and less abundant, it was treated by spraying with 2 pounds of arsenate of lead, 2 pounds of rock lime (where foliage was young), and 50 gallons of water. Where it appeared in spots dusting the attacked plants and those adjoining with equal parts of arsenate of lead and air-slaked lime was practiced. Barrel sprayers and traction sprayers were used on large acreages, but knapsack sprayers and small compressed air sprayers were most commonly employed.

The insect was successfully controlled, not a single patch was lost because of this pest, although the contrary has been usual in previous years. Farmers have thus been brought to realize the value of systematic control work."

Mr. Barrios hopes to induce those who grow onions in LaFourche Parish to do systematic spraying for the control of thrips next year. Onions, shallots, and garlic are grown quite extensively in southern Louisiana, and while they often suffer severe injury from thrips, little is attempted in the way of control.

Thos.H.Jones.

Report on Alhambra Truck Crop Insects. Adults and eggs of Larid rufimana are becoming very scarce on broad beans. Oviposition was large over and the eggs hatched by May 7. Eggs were numerous on the pods of the plots planted in November and December, but scarce on those planted in January and February.

Broad beans infested with the bean aphid (Aphis rumicis) were dusted with a mixture of tobacco dust 50 per cent and kaolin 50 per cent, with an average killing of 91.6 per cent. The hand dusting machine used was not a good one. Spraying tests at the same time with nicotine sulphate 40 per cent, one gallon to 1200 gallons, and soap 4 pounds to 100 gallons gave an average killing of 97.9 per cent.

The melon aphid (Aphis gossypii) is very active at the time of

writing and most of the melon growers of the vicinity are spraying.

Roy E. Campbell,
Alhambra, Cal.,
May 15, 1918.

Report of the Wichita, Kansas, Station; The weather so far in May has been on the whole warm and conducive to rapid crop growth, although one or two light frosts have occurred.

Cutworms are active and abundant. Many individuals are becoming nearly grown, and injury seems to be decreasing. Not many are pupating as yet. An adult of Noctua c-nigrum was reared from a pupa taken in the field. Parasitism is almost absent.

Eggs deposited in April by overwintering individuals of the strawberry leaf-roller (Ancylis comptana) failed to develop.

The Colorado potato beetle (Leptinotarsa decemlineata) became active in numbers rather suddenly with the first warm days, about May 6. Since then the beetles have been feeding, mating and ovipositing, and the eggs are now beginning to hatch. The cabbage worm (Pontia rapae) is only slightly injurious. The largest larvae are full-grown and oviposition still continues. No more damage by flea beetles (Disonycha spp.) has been observed. Aphides have not yet appeared which is unusual for this season.

F.M. Wadley,
May 16, 1918.

SOUTHERN FIELD CROP INSECT INVESTIGATIONS.

The cotton boll weevil is reported by Mr. Coad as appearing quite generally in the Mississippi Delta near hibernation quarters. Mr. Smith reports approximately 5 per cent survival at Madison, Florida. The Southern Products Company of Dallas, Texas, which has agents throughout the cotton belt, has received reports of the weevil from Jefferson County, Arkansas, Alcorn County, Mississippi, a number of the southeastern counties of Alabama, including Chilton County, the southwestern counties of Georgia bounded by Muscogee, Taylor, Pulaski and Coffee counties; and from Madison, Alachua, Hamilton and Suwanee Counties, Florida. This company also has reports of lice and cutworms from many counties of Texas and Louisiana, and lice from scattered sections of the other states. Prodenia ornithogalli is reported quite injurious to cotton by J.D. Mitchell at Victoria, Texas, and reports are also at hand from Granger, Texas, and Bell County and other parts of Texas. Webworms are reported from Gonzales and Wilson Counties.

Laphygma frugiperda is reported as unusually severe at Victoria, Texas. This is probably the "grass worm" referred to in reports from Tensas Parish, Louisiana.

Diacrisia virginica is quite a cotton pest near Port Lavaca, Texas, according to Mr. Mitchell.

W.D. Pierce.

FOREST INSECT INVESTIGATIONS:

I am reporting some observations of the effect of the past winter on wood-boring larvae at East Falls Church, Virginia, to contrast the effects here and that which Mr. Champlain records at Lyme, Connecticut.

On some 30 species of Cerambycids in which the colonies are kept young from year to year, scarcely any effect of winter-killing was noticed, although some were exposed to what was thought very severe conditions. Many of both large infested logs and small branches were lying on the ground in an open insectary; a concrete wall 6 inches above the surface of the ground surrounds the compartments. During several months last winter these compartments were completely filled with solid ice so that no part of the logs or only the upper surface was exposed. Others lying at an angle only had the lower half incased in ice. In no case were any effects of winter killing apparent.

Other cages under a roofed insectary were confined in large glass cylinders with glass tops to keep the humidity constant. An examination of these cages showed only one in which larvae were killed. In this case the jar was covered with cheesecloth instead of glass and the wood became very dry. Of many miscellaneous cages the only larvae killed were in wood from California and some Prionus larvae from Atlanta, Georgia.

The winter at Falls Church was constantly cold, with few abrupt changes and lowest temperature about 13°F. below zero. This low temperature does not seem sufficient to kill these wood-boring forms.

Between the years 1908-1912 at State College, Pennsylvania, I experienced two winters that killed larvae in about the same proportions as Mr. Champlain reports from Lyme, Connecticut, last year. Both of these winters were characterized by continued low temperatures of 20°F below zero or even lower. Other winters, nearly as low temperatures were reached but only for a day or so, and winter killing was noticed.

From my experience I believe that a continued low temperature is more fatal to these wood-boring larvae than fluctuating low temperatures and that the fatal low temperature is somewhere between 15-20° below zero. Also there seems to be a greater mortality in exposed wood than in moist logs on the ground. The difference of humidity under these conditions may be an important factor.

F.C. Craighead.

The European Pine Sawfly, Diprion simile Hartig, has done much better in the rearing cages in the Eastern field station this year than last. As far as the notes show there has been no detrimental effect because of the severe winter. In fact the experiments seem to indicate that the milder winter, around Washington, has disastrous effect, while unusually severe weather of the last winter enables this sawfly to come through in much better condition and more abundant.

S.A. Rohwer.

REPORTS FROM STATE OFFICERS AND OTHER CORRESPONDENTS
ARRANGED BY STATES.

CONNECTICUT.

In cooperation with the Bureau of Entomology, scouting has been started to determine the distribution of the Oriental peach moth, Laspeyresia molesta Busck. This pest has already been found in the four towns of Greenwich, Stamford, New Canaan and Norwalk in the southwest corner of the State.

During the winter gipsy moth infestations have been discovered in the following towns adjacent to the territory formerly known to be infested: Union, Windham, Franklin, Bozrah, Norwich, Preston and Ledyard.

W.E. Britton,
April 23, 1918.

LOUISIANA.

Temperature ranges at this point have been high all through the month, but as regards this immediate vicinity, there has been no very marked increase in the more noticeable insect pests with the exception of the mealy bugs, Pseudococcus citri and P. longispinosus and a species of Pulvinaria on the fig trees. The crop is a large one and some anxiety in regard to possible loss is but natural. Last year, it is conservatively estimated that fully one-third of the crop was lost during the latter half of the season in this section from this cause. Householders are spraying extensively and are taking measures against the Argentine ant, a potent factor in the distribution of the mealy bugs.

Hyphantria cunea (or textor) reappeared in the outskirts of the city during the first week of April, one or two webs being noticed on mulberries, and were reported from St. Tammany Parish on pecans. Since then it has been noticed at one or two points within the city itself, and while it has not assumed the proportions of last year's visitation in July, public officials are alive to eventualities and spraying with arsenate of lead has been done. Smaller webs have been either torched or the limbs cut from the infested trees and burned.

There has been considerable complaint from cabbage growers, due to Pieris rapae and Pontia protodice. Some little damage has been reported to early corn by Heliothis obsoleta and the stalk-borer Ligyris rugiceps, the latter is also reported as doing damage to the young sugar cane in some of the lower parishes. Beans do not seem to be suffering much from the attacks of insects, but the aphid Macrosiphum pisi is doing considerable damage to the later pole varieties of peas. There is still some complaint of damage to lettuce by the "Pill bug" Armadillidium vulgare but not to the same extent as last month.

The Myriopod Polydesmus serratus has been doing some damage to young potted plants and seedlings in the flats. The species of lace-wing

bug (Corythuca spp.) reported last year as damaging chrysanthemums is at present doing conspicuous damage to both the rooted cutting and to carry-over plants, known as summer chrysanthemums. Thrips has been very conspicuous this year, and the writer has noted varieties of roses more susceptible to "black spot" seem to be the ones showing more prominently the work of the insect. Is there any connection? There has been no complaint as yet from rose-growers of damage by Diabrotica 12-punctata. The citrus white fly (Dialeurodes citri) has shown some increase but the damage up to the present has not been conspicuous.

Ed. Foster,
May 25, 1918.

MAINE.

April 26, specimens of the corn stalk borer (Papaipema nitela) were taken by the special field agent in entomology while examining stubble in York County.

On May 13, specimens of Lachnosterna tristis were received from Cornish, York County, with the statement that these beetles had visited shade trees in such numbers that their flight "made a noise that exceeds that of a dozen swarms of bees". This is apparently a very unusual record for Maine.

A fish cannery in the state, located on the shore, has been annoyed by the presence of flies, (Fucellia marina Macq. according to Johnson or F. fucorum Fall according to Aldrich). No actual damage was observed but the company was troubled by the abundance of these flies congregating on the pavement and about the windows. Accordingly about \$165 were expended in 1917 for repellent sprays. These flies are common on the seashore about dead fish so that their presence near a cannery erected right on the seashore is natural.

On account of the continuous dry weather the garden slugs (Mollusks) are at present much less abundant than they were one month ago. The writer has kept under damp boards poisoned bait composed of bran mixed with ground potato, apple, or other succulent substance since May 3. Arsenite of soda and Paris green were the two poisons used. Live slugs have been present continually under the bait boards in sufficient numbers to indicate that for some reason this trial has not met with success.

By May 24, the injuries by the bud moth (Tmetocera ocellana) were being reported as usual for Maine.

The special field agent is opening up a drive to induce cabbage growers to take preventive steps against root maggots. These flies have discouraged growers in certain parts of the state from attempting to grow early cabbage which is not to be wondered at since little control work against this pest has been done in the State.

Edith M. Patch,
May 25, 1918.

NEVADA.

The following notes upon an outbreak of the alfalfa plant louse Macrosiphum Creelii, near Fernley, Nevada are of interest:

After an unusually mild and open winter followed by a cool and rainless spring this species appeared in great numbers over a considerable portion of the range lands near Fernley. The growth of the alfalfa has been severely checked. Fields which should have a stand 10 inches high bear only a stunted growth from five to six inches in height. The leaves are smeared with honey dew and the lice are clustered in great numbers along the stems. There is the usual evidence of hymenopterous parasitism; and ladybird beetles are numerous.

In the worst infested fields it appears that the plant lice were more numerous earlier and that they have migrated in part, since the alfalfa in these fields is now making a new start it is inadvisable to drag or to spray them. I can advise only copious irrigation of the drier fields in the hope that warm weather, which is now due, will bring about some measure of recovery with a fair yield of hay.

The past history of this pest in the Fernley region indicates that while it may check the growth of the first crop of alfalfa the total loss for the year is not heavy, since the second crop is very apt to be extra heavy when the first crop is a little light, and since the second and third crops are not affected by the plant louse.

Cutworms, *Peridromia*, *Euxoa*, etc. are not numerous enough at present to have any noticeable effect.

F.B. Doten,
May 25, 1918.

OREGON.

A few warm days in early April followed by a cool rainy April and a cool May have resulted in the most serious outbreak of aphids that western Oregon has experienced in recent years. Practically no type of crop or plant has escaped infestation and in the majority of cases the attack is extreme. Ornamentals, vegetable and truck crops, field crops and fruit trees are affected.

In the case of deciduous fruits the standard sprays are being recommended. In the case of field crops some experiments have been carried on and rather interesting results obtained. In addition to the very serious infestation of field vetch and peas by the pea aphid, Macrosiphum pisi, spring grain including wheat, oats and rye are seriously infested, the aphid at this time working in the head of the rye and about the base of the young plants of spring wheat.

Because of the extreme injury by the pea aphid on vetch some control measures were necessary and a number of experiments were undertaken. Field spraying rigs were constructed and a solution consisting of black Leaf 40 and soap at a strength of 1 pint of Black Leaf 40 to 200 gallons of water, with the addition of 8 pounds of fish oil, soap were used. Following

a number of alterations in the spray rig we finally obtained an outfit which thoroughly wet the insects. However, the control obtained was not satisfactory. Next a brush drag was used, using long 2 x 4's in front to knock the aphids off on the soil, with long fir boughs dragged behind to smash them into the soil. Again, the number of aphids destroyed and when considering the amount of injury done to the vetch was not sufficient to warrant this practice. The third type of treatment developed was a machine similar to a hopper-doser. The one actually used in our experiment consisted of 2 sections, one directly behind the other, each section approximating the following dimensions. The floor of the drag is 10 feet long and 18 inches wide. This rests on skids 3 inches high. The ends are boarded up and a backstop 12 inches high is used. The hind section is exactly similar to the front except that an additional back stop of burlap is used, making the entire height 3 feet. A narrow cleat is also placed along the front of the floor of the hind section. This section is chained to the front section, 18 inches space being left between the two. One horse is hitched to guy wires above the vetch. The experimental plats consist of approximately 12 acres, were dragged and a total of more than 140 pounds of aphids were captured by this drag. Because of the number that are knocked off by this machine and fall on the ground, it is necessary to drag the field a second time one day later for results. It is believed that this machine might be of use for clover aphids and this is the excuse I have for giving such detailed information concerning the drag. Because of weather conditions the natural enemies have been very slow in coming to the relief of the aphids proposition. Syrphus fly larvae are present now in fairly good numbers, but so far the parasitic hymenoptera and Coccinellidae have failed to appear in any numbers at all. In some of the vetch fields a fungus disease, determined by Mr. Rockwood of the Federal Station at Forest Grove, as Empusa aphidis-Hoffman, is killing aphids in great numbers, but apparently only in limited areas here and there in the fields.

Blister beetles, belonging to the species Cantharis cyanipennis Say, are reported as doing serious injury to alfalfa in Morrow County. The indications are at present that the attack is local in nature.

Mr. B. G. Thompson, Federal specialist in charge of the grasshopper campaign in eastern Oregon, working at present in Harney County, reports as follows: "We are now mising and spreading poison every day. Have out on an average of 40 men. Will make May 11 our first big drive when we expect out at least 500 people. Expect to mix and spread about 3000 pounds of poison then as about 300 acres of egg deposits will be ready to treat. The hoppers are not leaving the egg beds to any extent yet, but remain massed up. In some places several acres will be completely covered with hoppers, several deep."

Stored product pests are occasioning no little injury in warehouses where feed and cereal products are yet stored. The two worst offenders seem to be the saw-tooth grain weevil, Silvanus surinamensis, and the rice weevil, Calandria oryza. A recent report from Wasco County with accompanying specimen, shows a heavy infestation of a warehouse with one of the Tenebrionid beetles, species not determined.

Flat-head borers generally have been doing but little injury to fruit trees in Oregon, but this spring serious injury to young prune trees are received from Douglas County in southern Oregon and from Union County in eastern Oregon and similar reports from Clackamas County, the hosts

here being peach. The species is in all cases Chrysobothris mali. Orchardists have practically completed the application of the calyx spray for the codling moth on apples. Commercial calcium arsenate is not available in quantities so that any considerable number of growers are attempting to use it. Many, however, on account of the high price of arsenate of lead are using the arsenite of lime, making it up according to the Kedzie formula. Because of the shortage of labor a great many spray guns of different types or manufacture are being used in commercial orchards this year. Preliminary surveys would indicate that the element of thoroughness is sacrificed in the majority of cases, the top of the tree failing to be covered at all. A species of milliped, not determined, has been doing a great deal of injury in various portions of the state on truck garden crops and has recently been reported as killing out fields of strawberries and onions in southern Oregon.

Bees. In an effort to combat the foul brood proposition in western Oregon and encourage beekeepers to better methods, an effort is being made to improve beekeeping conditions by transferring to modern hives and introducing purebred queens. The College is attempting to do the transferring and purchasing the bees from California and selling them to the beekeepers at cost.

3-in-1. Following two years experimental work with the mixture known as 3-in-1 consisting of sulphur, 50 parts and tobacco dust 40 parts, powdered arsenate of lead 10 parts, the college is now recommending this material as a general insecticide for war garden use. This material is put out by the Niagara Spray Company and they sell it to us at Wholesale cost in 100 pound bags. This is re-bagged in 5 pound containers and sold to war garden growers. It has been our observation for western Oregon conditions that dusts generally do not burn where a similar spray solution will. This dust has proved very effective for the control of all ordinary worms, flea beetles and plant lice. It is in a convenient form and we find it much easier to get the average gardner to use some material such as this rather than to study each particular pest that attacks the garden and attempt to use definite control measures for each.

A.L. Lovett,
May 14, 1918.

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